

Appendix 1.

Analysis of immunogenic regions of PspA protein from *S. Pneumoniae* strain Rx1.

Immunogenic regions are idicated by asterisks underneath the sequence.

Name: surface protein pspA precursor - Streptococcus pneumoniae

Organism: (Streptococcus pneumoniae)

Time and Date: 3:15 pm, March 27, 2000

References: Reference 1:

Journal: J. Bacteriol. (1992) 174:601-609

Residues: 1-619

Reference 2:

Journal: Infect. Immun. (1991) 59:1285-1289

Residues: 32-76

	10	20	30	40	50	
1	EESPVASQSKAEKDYDAAKKDAKNAKKAVEDAQKALDDAKAAQKKYDEDQ					50
	5*****				52	
	3*****			29*****		
	10	20	30	40	50	
51	KKTEEKAALKAASEEMDKAVAAVQQAYLAYQQATDKAAKDAADKMDIA					100
	*****	66*****	73*****			
					78**	
	10	20	30	40	50	
101	KKREEEAKTKFNTVVRAMVPEPEQLAETKKKSEEAKQKAPELTKKLEEAK					150
	91*****	95*****		123*****		
	****		101****	122*****		
	89*****		116*****			
	10	20	30	40	50	
151	AKLEEAEEKKATEAKQKVDAAEVAPQAKIAELENQVHRLEQELKEIDSESES					200
	133*****		140*****		15	
	130*****			145*****		
	10	20	30	40	50	
201	EDYAKEGFRAPLQSKLDAKKAKLSKLEELSDKIDELDAEIAKLEDQLKAA					250
	8*****		168*****			
			166*****		1	
	10	20	30	40	50	
251	EENNNVEDYFKEGLEKTIAAKKAELEKTEADLKKAVNEPEKPAPAPETPA					300
	179*****	185*****		206*****		
	76****	182*****	195*****			

10 20 30 40 50
301 PEAPAEQPKPAPAPQAPAPKPEKPAEQPKPEKTDDQQAEEYARRSEEE 350

	10	20	30	40	50	
351	YNRLTQQQ	PRKA	EPAP	APKT	GWKQ	ENGMWYFYNTDGS
						MATGWLONNGSW
						400

10 20 30 40 50
401 YYLNSNGAMATGWLQYNGSWYYLNANGAMATGWAKVNGSWYYLNANGAMA 450

	10	20	30	40	50
451	TGWLQYNGSWYYLNANGAMATGWAKVNGSWYYLNANGAMATGWLOYNGSW				500

10 20 30 40 50
501 YYLNANGAMATGWAKVNGSWYYLNANGAMATGWVKDGDWTWYYLEASGAMK 550

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10      20      30      40      50
551  ASQWFKVSDKWYYYVNLGALAVNTTVDGYKVNANGEWV 588

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Motif #: 3                      Range: 6 - 13
Motif:  * [DEGHKNPQRST] [DEHGKNPQRST] [DEHGKNPQRST] [DEHGKNPQRST] * [DEHGK
QRST]*
Ref.:  WISHART, D.S. UNPUBLISHED
Name:  GENERALIZED B CELL EPITOPE PATTERN
Motif #: 5                      Range: 8 - 15
Motif:  * [DEGHKNPQRST] [DEHGKNPQRST] * [DEHGKNPQRST] [DEHGKNPQRST] [DEHGK

```

QRST)*

Ref.: WISHART, D.S. UNPUBLISHED

Name: GENERALIZED B CELL EPITOPE PATTERN

Motif #: 29 Range: 42 - 49

Motif: *(DEGHKNPQRST)[DEHGKNPQRST][DEHGKNPQRST]*[DEHGKNPQRST][DEHGK
QRST)*

Ref.: WISHART, D.S. UNPUBLISHED

Name: GENERALIZED B CELL EPITOPE PATTERN

Motif #: 52 Range: 49 - 56

Motif: *(DEGHKNPQRST)[DEHGKNPQRST][DEHGKNPQRST][DEHGKNPQRST]*[DEHGK
QRST)*

Ref.: WISHART, D.S. UNPUBLISHED

Name: GENERALIZED B CELL EPITOPE PATTERN

Motif #: 66 Range: 63 - 70

Motif: *(DEGHKNPQRST)[DEHGKNPQRST][DEHGKNPQRST]*[DEHGKNPQRST][DEHGK
QRST)*

Ref.: WISHART, D.S. UNPUBLISHED

Name: GENERALIZED B CELL EPITOPE PATTERN

Motif #: 73 Range: 81 - 88

Motif: *(DEGHKNPQRST)[DEHGKNPQRST]*[DEHGKNPQRST][DEHGKNPQRST][DEHGK
QRST)*

Ref.: WISHART, D.S. UNPUBLISHED

Name: GENERALIZED B CELL EPITOPE PATTERN

Motif #: 78 Range: 97 - 104

Motif: *(DEGHKNPQRST)[DEHGKNPQRST]*[DEHGKNPQRST][DEHGKNPQRST][DEHGK
QRST)*

Ref.: WISHART, D.S. UNPUBLISHED

Name: GENERALIZED B CELL EPITOPE PATTERN

Motif #: 89 Range: 104 - 111

Motif: *(DEGHKNPQRST)[DEHGKNPQRST]*[DEHGKNPQRST][DEHGKNPQRST][DEHGK
QRST)*

Ref.: WISHART, D.S. UNPUBLISHED

Name: GENERALIZED B CELL EPITOPE PATTERN

Motif #: 91 Range: 107 - 114
 Motif: *[DEGHKNPQRST][DEHGKNPQRST][DEHGKNPQRST]*[DEHGKNPQRST][DEHGK
 QRST]*
 Ref.: WISHART, D.S. UNPUBLISHED
 Name: GENERALIZED B CELL EPITOPE PATTERN

Motif #: 95 Range: 119 - 125
 Motif: *[DEGHKNPQRST][DEHGKNPQRST][DEHGKNPQRST][DEHGKNPQRST][DEHGKN
 RST]*
 Ref.: WISHART, D.S. UNPUBLISHED
 Name: GENERALIZED B CELL EPITOPE PATTERN

Motif #: 101 Range: 127 - 133
 Motif: *[DEGHKNPQRST][DEHGKNPQRST][DEHGKNPQRST][DEHGKNPQRST][DEHGKN
 RST]*
 Ref.: WISHART, D.S. UNPUBLISHED
 Name: GENERALIZED B CELL EPITOPE PATTERN

Motif #: 116 Range: 132 - 139
 Motif: *[DEGHKNPQRST][DEHGKNPQRST]*[DEHGKNPQRST][DEHGKNPQRST][DEHGK
 QRST]*
 Ref.: WISHART, D.S. UNPUBLISHED
 Name: GENERALIZED B CELL EPITOPE PATTERN

Motif #: 122 Range: 139 - 146
 Motif: *[DEGHKNPQRST][DEHGKNPQRST]*[DEHGKNPQRST][DEHGKNPQRST][DEHGK
 QRST]*
 Ref.: WISHART, D.S. UNPUBLISHED
 Name: GENERALIZED B CELL EPITOPE PATTERN

Motif #: 123 Range: 142 - 149
 Motif: *[DEGHKNPQRST][DEHGKNPQRST][DEHGKNPQRST]*[DEHGKNPQRST][DEHGK
 QRST]*
 Ref.: WISHART, D.S. UNPUBLISHED
 Name: GENERALIZED B CELL EPITOPE PATTERN

Motif #: 130 Range: 153 - 160
 Motif: *[DEGHKNPQRST][DEHGKNPQRST]*[DEHGKNPQRST][DEHGKNPQRST][DEHGK
 QRST]*
 Ref.: WISHART, D.S. UNPUBLISHED

name: GENERALIZED B CELL EPITOPE PATTERN

Motif #: 166 Range: 226 - 233

Motif: *[DEGHKNPQRST][DEHGKNPQRST]*[DEHGKNPQRST][DEHGKNPQRST][DEHGK
QRST]*

Ref.: WISHART, D.S. UNPUBLISHED

Name: GENERALIZED B CELL EPITOPE PATTERN

Motif #: 168 Range: 229 - 236

Motif: *[DEGHKNPQRST][DEHGKNPQRST][DEHGKNPQRST]*[DEHGKNPQRST][DEHGK
QRST]*

Ref.: WISHART, D.S. UNPUBLISHED

Name: GENERALIZED B CELL EPITOPE PATTERN

Motif #: 176 Range: 250 - 256

Motif: *[DEGHKNPQRST][DEHGKNPQRST][DEHGKNPQRST][DEHGKNPQRST][DEHGKN
RST]*

Ref.: WISHART, D.S. UNPUBLISHED

Name: GENERALIZED B CELL EPITOPE PATTERN

Motif #: 179 Range: 252 - 259

Motif: *[DEGHKNPQRST][DEHGKNPQRST][DEHGKNPQRST]*[DEHGKNPQRST][DEHGK
QRST]*

Ref.: WISHART, D.S. UNPUBLISHED

Name: GENERALIZED B CELL EPITOPE PATTERN

Motif #: 182 Range: 260 - 267

Motif: *[DEGHKNPQRST][DEHGKNPQRST][DEHGKNPQRST]*[DEHGKNPQRST][DEHGK
QRST]*

Ref.: WISHART, D.S. UNPUBLISHED

Name: GENERALIZED B CELL EPITOPE PATTERN

Motif #: 185 Range: 261 - 268

Motif: *[DEGHKNPQRST][DEHGKNPQRST]*[DEHGKNPQRST][DEHGKNPQRST][DEHGK
QRST]*

Ref.: WISHART, D.S. UNPUBLISHED

Name: GENERALIZED B CELL EPITOPE PATTERN

Motif #: 195 Range: 275 - 282

Motif: *[DEGHKNPQRST][DEHGKNPQRST][DEHGKNPQRST][DEHGKNPQRST]*[DEHGK
QRST]*

Ref.: WISHART, D.S. UNPUBLISHED

Name: GENERALIZED B CELL EPITOPE PATTERN

Motif #: 199 Range: 281 - 290

Motif: ***[DEHKGK][VAILMFWTY][VAILMFWTY][DEHKGSTNQ]***

Ref.: ROTHBARD, J.B. ET AL., EMBO J. 7:93-101 (1988)

Name: GENERALIZED T CELL EPITOPE PATTERN

Motif #: 206 Range: 288 - 295

Motif: *[DEGHKNPQRST][DEHGKNPQRST][DEHGKNPQRST][DEHGKNPQRST]*[DEHGK
QRST]*

Ref.: WISHART, D.S. UNPUBLISHED

Name: GENERALIZED B CELL EPITOPE PATTERN